

**University of Mumbai**  
**Examinations Summer 2022**

Time: 2 hour 30 minutes

Max. Marks: 80

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<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	Noise figure for a receiver is defined as the ratio of
Option A:	(S/N) ratio at the input to (S/N)ratio at the output
Option B:	(S/N) ratio at the output to (S/N)ratio at the Input
Option C:	S/N ratio at the input
Option D:	S/N ratio at the output
2.	Which radarscope plots target echo amplitude versus range on rectangular coordinates for some fixed direction? It is also used primarily for tracking radar applications than for surveillance radars.
Option A:	PPI Scope
Option B:	B scope
Option C:	A scope
Option D:	F scope
3.	The conversion loss of a mixer is defined as
Option A:	Ratio of available RF power to available IF power
Option B:	Ratio of available IF power to available RF power
Option C:	Product of available RF and IF power
Option D:	sum of available RF anf IF power
4.	The intensity modulated map like circular display that gives target location in polar coordinates
Option A:	F scope
Option B:	A scope
Option C:	B scope
Option D:	PPI
5.	One of the following is a crossed field device
Option A:	Magnetron
Option B:	Travelling wave Tube
Option C:	Two cavity klystron
Option D:	Reflex klystron
6.	Cross-field amplifier (CFA) is very close associate of
Option A:	magnetron
Option B:	Helix Travelling wave tube
Option C:	Multicavity Klystron
Option D:	Coupled cavity TWT
7.	The phase velocity of RF field's axial component in the TWT slow-wave structure is

Option A:	equal to the velocity of the electrons
Option B:	slightly less than the velocity of the electrons
Option C:	slightly greater than the velocity of the electrons
Option D:	equal to the velocity of light in vacuum
8.	The main advantage of TWT over a multi-cavity klystron is
Option A:	greater bandwidth
Option B:	more efficient
Option C:	higher number of modes
Option D:	higher output power
9.	Repellar electrode is associated with which microwave tube
Option A:	Reflex Klystron
Option B:	Multicavity klystron
Option C:	Gyrotro
Option D:	Cross field amplifier
10.	The oscillating frequencies of different modes of magnetrons are not same and are quite close to each other, which results in
Option A:	helping focusing
Option B:	providing attenuation
Option C:	improving bunching
Option D:	Mode Jumping
<b>Q2.</b>	<b>Solve any Two Questions out of Three</b> <span style="float: right;"><b>10 marks each</b></span>
A	What do you mean by radar cross section (RCS)? Explain RCS of sphere.
B	Draw and explain sequential lobing tracking radar?
C	Describe probability of detection and false alarm in radar system.
<b>Q3.</b>	<b>Solve any Two Questions out of Three</b> <span style="float: right;"><b>10 marks each</b></span>
A	Draw the functional block diagram of MTI RADAR system and explain its operation.
B	Describe radar frequencies and various radar applications.
C	Derive basic RADAR range equation.
<b>Q4.</b>	<b>Solve any Two Questions out of Three</b> <span style="float: right;"><b>10 marks each</b></span>
A	Describe the operation of Delay Line canceler in RADAR.
B	Write note on radar plotting
C	Explain doppler filter banks along with its merits and demerits.